

CALIFORNIA STATE DEPARTMENT OF PUBLIC HEALTH

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EDITOR

Water-Tight Well Construction is Important

Since the zone between the high and low positions of ground water table is the region of underground pollution, and since pollution does not appear to diffuse downward in the ground water, we see why it is imperative that water wells be made structurally water-tight from their top at ground surface to a point a few feet below the lowest ground water table. In the case of water wells in a neighborhood that also employs sewer wells and deep cesspools, the water wells must be leak-tight to a depth several feet below the level of the bottoms of such sewer wells. We can understand, too, why dug wells with porous side walls can be so extremely dangerous and why, if built, they need special concrete construction to keep out surface ground water and special isolation from privies and sewage disposal areas.

In fact more burden should be put on the builder of a water well to get sanitary construction. It would relieve much of the anxiety over one's sewage disposal.

The main points about sanitary well construction in the country are to keep drippage out of the well and shed it onto ground several feet from the well; and build the casing or walls of the well water-tight from a point a foot or so above ground to a depth a few feet below lowest ground water table, and also below lowest sewer wells in the vicinity.

There are two ways of procuring a water-tight casing. The ordinary slip joint and double cased wells are far from secure against polluted ground water. One way is to use screwed joint, wrought

iron pipe. This requires use of power equipment for driving the well. The other way is to use an inner and an outer casing the desired depth, and fill the space between with rich cement mortar. The mortar can only be poured into the ring if there is no water in it. If there is water in the ring then mortar must be made with scarcely any sand and put in place by a hose reaching down the ring and gradually rising as the space fills with mortar. Mortar falling through water has the cement washed out of it and it becomes like sand in its lower layers.

Dug wells not well isolated are always questionable. They may not only be surrounded by polluted ground water between its high and low water tables, but even deep dug wells may be fed by fissures originating no one knows where. If the fissure water is considered safe and yet there is a danger of polluted ground water lying around the well, the well may be protected against the pollution by lining with water-tight concrete down to the lowest level of water table outside. The work had best be done in summer.

In addition all dug wells need better protection at the top. The curb should reach above ground, the whole top cover should be made water-tight and there should be a concrete apron around the well, shedding water a few feet away from it. This is to avoid pollution following down the side of the well. The rope and bucket for getting water out of dug wells is exposed to danger of disease on the hands of users or even to dirt on the ground. The hand pump as used is generally defective in that drippage

washes dirt and possible disease back into the well. It is better to use a pump with a tray beneath the spout to lead all drippage and pumpings at least beyond the apron.

Water tanks in the country often have no covers and hence sunlight in them soon sets up a moss growth. The remedy is to put a good cover over the tank.

When water in country wells tastes badly or becomes discolored it is apt to be a sign of drawing strong on some water stratum that is inferior. Analysis of the water is generally a wasted expense, for after it is made there is little that can be done about it except to get a new well location.

One may experiment with aeration and with a household filter. Sometimes chilling the water makes it palatable.

Damage by dead animals or decaying matter in a well is best dealt with by pumping out the well until the water becomes palatable. Chloride of lime, about one pound to 10,000 gallons, is a good disinfectant, but it too will leave a taste for a time unless the water is pumped out afterwards.

HELP HEALTH OFFICERS USE NEW METHODS

There is no dogma, "ism," cult, formula or set of rules that point a sure way to health. It is possible, however, to master certain fundamental principles that represent the best health knowledge at present. Dr. H. E. Kleinschmidt outlines in *Hygeia* for October a few planks in a platform of health that embodies these principles.

Health protection is available in large measure through government action. A fundamental factor in a formula for health, then, is to see to it that all that public health offers is secured for a community. Nor is merely appropriating money enough. Those who disburse the money must have the moral support of an understanding public. They need the stimulation that comes from appreciation of their efforts.

The limit of protection by public health measures is soon reached, however. Each person's problem of health is his individual responsibility. No rule of thumb may be relied on when sickness comes. To cast one's burden of sickness on the doctor comes near to being a workable practical formula. The doctor does not work miracles, but he has explored the storehouse of accumulated medical knowledge and this experience he gladly uses for those who need it.

A third tenet in the creed of health outlined by Dr. Kleinschmidt is that every one should become acquainted with the raw materials out of which knowledge is made. Fundamental knowledge about

the body, eugenics, bacteriology, sanitation and the principles of healthful living should be taught in the schools. Science may advance a new life-saving measure, but unless the people understand and approve it is of no value.

SUMMARY OF THE INCIDENCE OF COMMUNICABLE DISEASES FOR THE FIRST EIGHT MONTHS OF 1929

In many of the infectious diseases there are fluctuations referred to as cycles. These cycles have been studied, but we are still without a complete understanding of their causes. Control measures applied by man may alter the course of the cycles as in (1) the control of smallpox by vaccination, (2) typhoid fever by improved sanitation, supervision of water and milk supplies, and immunization, and (3) diphtheria by immunization.

Glancing over the table giving the total number of cases of reportable diseases recorded during the first eight months of this year, compared with the number of cases of the same diseases reported during the first eight months of last year, the reduction in the incidence of diphtheria is conspicuous. There were 1870 cases of diphtheria reported this year as compared with 3330 cases for the same period last year, a reduction of 43 per cent. The reduction shows even more conspicuously in the number of deaths, 55 per cent (88 deaths in the first seven months of 1929 against 196 in the first seven months of 1928). There have been not only fewer epidemics of diphtheria this year, but, in addition, there has been a reduction in the endemic incidence. This is manifested in the reduction of the number of cases during the summer months when the disease is more or less quiescent. (August, 1929, 142 cases, against 274 in August 1928.) Part of this reduction can be attributed to diphtheria immunization. The incidence of diphtheria during the first eight months of this year has been lower than at any time for the same period during the past ten years. Unless a much larger proportion of our population, particularly children, is immunized, the curve will rise and in a few years epidemic conditions will again become prevalent.

Typhoid fever is also strikingly low. In fact, the 416 cases reported during these first eight months represent the lowest incidence for that period in over ten years. There have been so far this year only two groups consisting of more than five cases:

1. Tuolumne County—Seven cases in Jacksonville. One of these cases was the cook in the hotel, and as an ambulatory case was considered to have been

responsible for the six cases among the boarders in the hotel.

2. Plumas County—Eight cases at Engelmire, all of whom had taken their meals at the camp mess hall. There is much transient help in the camp and several employees in the mess hall had been employed for only a short time. On account of this turnover of labor, it was impossible to make a complete survey of the food handlers involved. The examination made failed to reveal a carrier.

It is believed that the conditions surrounding the incidence of typhoid fever are different from those associated with diphtheria. A very large percentage of the reduction of typhoid fever has been effected by man. The low prevalence of this disease, as indicated by this year's records, is an index of the sanitary conditions in this state. We can not give a guarantee against explosive outbreaks now and then due to individual carelessness in the supervision of water, milk, and food supplies, but the low level of the endemic incidence of typhoid fever attained is the index of sanitary conditions of the state as a whole.

Malaria remains low even though more cases have been reported to date than for the same period last year. Since July first of this year 26 cases have been reported, 10 of which are known to have received their infection either before entering the state or while traveling through the southern and southwestern states. For the same period last year 9 cases were imported.

There are seven diseases which already stand higher than the records of last year for the entire twelve-month period:

Disease	1929 to Aug. 31	1928 12 months
Mumps	12,092	10,277
Meningitis (Epidemic)	607	259
Scarlet Fever	11,438	7,540
Smallpox	1,827	1,176
Dysentery (Bacillary)	630	86
Ophthalmia Neonatorum	24	17
Encephalitis (Epidemic)	75	71

While the meningitis epidemic subsided in June, the casual cases continued to appear in larger numbers than was normal until the first of September. Only four cases were reported last week, which is the least for any one week since November, 1928. Smallpox is widely spread over the state. The outbreak of bacillary dysentery at San Quentin explains the increase for that disease.

It can be said, in general, that the improved status of health administration throughout California in the form of more trained health officers with full-time health organizations, and the work done by the increased number of public health nurses have helped

to increase the efficiency of the reporting of communicable diseases. Undoubtedly, some of the peaks of the communicable diseases, the minor diseases especially, are on record as the result of this better health service.

CASES OF TYPHOID FEVER AND DIPHTHERIA, CALIFORNIA

January 1 to August 31—1920 to 1929, Inclusive

Year	Cases of Diphtheria	Cases of Typhoid Fever
1920	3,485	723
1921	4,645	600
1922	5,460	585
1923	5,281	506
1924	7,936	1,277
1925	3,678	556
1926	3,534	687
1927	4,222	469
1928	3,330	462
1929	1,870	416

CASES OF REPORTABLE DISEASES, CALIFORNIA

Disease	1928 to Aug. 31	1929 to Aug. 31
Actinomycosis	1	4
Botulism	4	9
Chickenpox	15,207	13,161
Coccidioidal Granuloma	21	27
Diphtheria	3,330	1,870
Dengue	—	3
Dysentery (Amoebic)	35	41
Desentery (Bacillary)	75	630
Encephalitis (Epidemic)	39	75
Erysipelas	540	602
Food Poisoning	110	130
German Measles	8,858	857
Gonococcus Infection	3,720	3,800
Hookworm	10	7
Influenza	1,147	5,159
Jaundice (Epidemic)	6	6
Leprosy	15	13
Malaria	41	64
Measles	3,677	2,610
Meningitis (Epidemic)	157	607
Mumps	7,769	12,092
Ophthalmia Neonatorum	14	24
Paratyphoid Fever	28	77
Pellagra	49	50
Pneumonia (Lobar)	2,369	2,599
Poliomyelitis	228	119
Rabies (Animal)	530	537
Rabies (Human)	3	2
Rocky M. Spotted Fever	8	13
Scarlet Fever	5,046	11,438
Smallpox	814	1,827
Syphilis	5,126	5,486
Tetanus	59	50
Trachoma	93	80
Trichinosis	19	2
Tuberculosis (Pulmonary)	7,024	7,220
Tuberculosis (Other Forms)	401	341
Tularemia	3	10
Typhoid Fever	462	416
Typhus Fever	2	1
Undulant Fever	5	38
Whooping Cough	7,229	7,665

"In all periods, science has been advanced by individuals, never by the spirit of the age. The spirit of the age condemned Socrates to hemlock and burned Huss."—Vaungenargues.

MORBIDITY***Diphtheria.**

37 cases of diphtheria have been reported, as follows: Oakland 6, Los Angeles County 8, Alhambra 1, Azusa 1, Compton 1, Glendale 4, La Verne 1, Los Angeles 6, Pasadena 1, Monterey Park 1, Mendocino County 1, Fullerton 1, San Francisco 1, Santa Clara County 4.

Scarlet Fever.

71 cases of scarlet fever have been reported, as follows: Oakland 12, Fresno County 2, Kern County 1, Kings County 1, Los Angeles County 5, Culver City 1, Inglewood 2, Long Beach 2, Los Angeles 12, Bell 2, Mendocino County 1, Plumas County 1, Sacramento 2, Redlands 1, San Diego 3, San Francisco 8, San Joaquin County 2, Stockton 3, San Mateo County 1, Santa Clara County 3, San Jose 2, Sunnyvale 1, Siskiyou County 2, Santa Rosa 1.

Whooping Cough.

115 cases of whooping cough have been reported, as follows: Berkeley 11, Oakland 11, Fresno County 1, Eureka 1, Kern County 7, Los Angeles County 16, Glendale 1, Long Beach 1, Los Angeles 26, Monrovia 4, Pasadena 6, Santa Monica 1, Whittier 1, Mendocino County 1, Anaheim 1, Sacramento 1, San Diego 11, San Francisco 5, Lodi 3, Stockton 2, Santa Clara County 2, Tulare County 2.

Smallpox.

22 cases of smallpox have been reported, as follows: Los

Angeles 1, Pasadena 1, Redlands 1, San Francisco 5, San Luis Obispo County 7, San Luis Obispo 2, San Mateo County 1, Santa Clara County 4.

Typhoid Fever.

7 cases of typhoid fever have been reported, as follows: Los Angeles 2, Pasadena 1, Plumas County 1, San Francisco 1, Santa Barbara 1, Sonoma County 1.

Meningitis (Epidemic).

6 cases of epidemic meningitis have been reported, as follows: Hawthorne 1, Gustine 1, San Francisco 1, San Luis Obispo 1, Santa Clara County 1, Siskiyou County 1.

Poliomyelitis.

5 cases of poliomyelitis have been reported, as follows: Oakland 1, Los Angeles 3, Montebello 1.

Encephalitis (Epidemic).

2 cases of epidemic encephalitis have been reported, as follows: Kern County 1, Los Angeles 1.

Food Poisoning.

Oakland reported one case of food poisoning.

Undulant Fever.

2 cases of undulant fever have been reported, as follows: Los Angeles County 1, San Jose 1.

* From reports received on September 23d and 24th for the week ending September 21st.

COMMUNICABLE DISEASE REPORTS

Disease	1929			1928			
	Week ending			Week ending			
	Aug. 31	Sept. 7	Sept. 14	Reports for week ending Sept. 21 received by Sept. 24	Sept. 1	Sept. 8	Reports for week ending Sept. 22 received by Sept. 25
Actinomycosis-----	0	0	1	0	0	0	0
Anthrax-----	0	0	0	0	0	0	0
Chickenpox-----	28	51	47	83	31	53	28
Coccidioidal Granuloma-----	0	1	1	0	1	1	73
Diphtheria-----	37	29	24	37	45	49	40
Dysentery (Amoebic)-----	3	2	0	0	2	3	1
Dysentery (Bacillary)-----	7	4	0	1	1	2	64
Encephalitis (Epidemic)-----	1	2	0	2	0	1	1
Erysipelas-----	12	3	5	9	7	8	7
Food Poisoning-----	13	0	0	1	0	0	2
German Measles-----	5	3	8	6	8	7	13
Glanders-----	0	0	0	0	0	0	0
Gonococcus Infection-----	104	133	127	112	100	119	122
Influenza-----	8	6	12	10	7	30	9
Jaundice (Epidemic)-----	1	0	0	0	0	0	0
Leprosy-----	0	0	1	0	2	0	0
Malaria-----	4	3	5	2	0	4	7
Measles-----	30	32	26	32	20	15	20
Meningitis (Epidemic)-----	6	7	3	6	3	2	1
Mumps-----	104	77	110	157	45	60	64
Ophthalmia Neonatorum-----	0	1	0	0	0	0	0
Paratyphoid Fever-----	1	1	0	0	0	2	0
Pellagra-----	6	0	2	2	0	1	1
Plague-----	0	0	0	0	0	0	0
Pneumonia (Lobar)-----	47	36	18	27	25	45	36
Poliomyelitis-----	7	4	8	5	6	7	4
Rabies (Animal)-----	8	14	14	17	17	9	11
Scarlet Fever-----	64	70	56	71	34	42	63
Smallpox-----	24	13	21	22	7	18	13
Syphilis-----	180	121	164	84	157	159	111
Tetanus-----	2	2	2	1	3	3	2
Trachoma-----	0	1	3	1	2	2	5
Trichinosis-----	0	0	0	0	0	0	1
Tularemia-----	1	0	0	0	1	6	0
Tuberculosis-----	234	191	150	150	148	230	175
Typhoid Fever-----	20	20	13	7	44	23	21
Undulant Fever-----	3	1	1	2	0	0	2
Whooping Cough-----	117	108	107	115	134	95	175
Totals-----	1,077	936	929	962	852	997	945
							1,061